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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Gregory D. Miller

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EXAMINER

ROSENAU, DEREK JOHN

ART UNIT

PAPER NUMBER

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/821,357	<b>Applicant(s)</b> MILLER ET AL.	
	<b>Examiner</b> Derek J. Rosenau	<b>Art Unit</b> 2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 09 January 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 17-36 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 17-36 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 1/9/2009 has been entered.

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 20-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pahl et al. (US 6931699) in view of Tsuzuki et al. (US 20030127943).

3. With respect to claim 20, Pahl et al. discloses a lithographically-fabricated surface acoustic wave (SAW) device (Figs 1-7), the SAW device comprising: means for carrying a surface acoustic wave (item 1); transducer structures (items 2a and 2b) coupled to the means for carrying (Fig 6); and a wafer-level means for sealing the means for carrying the surface acoustic wave (items 7-9).

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Pahl et al. does not disclose expressly that the sealing structure hermetically seals the means for carrying or that the self-supporting structure abuts the electrical contact areas of the transducer structures.

Tsuzuki et al. teaches a SAW device in which the means for carrying is hermetically sealed (Abstract), and in which a self-supporting structure (Fig 1, items 10 and 20) abuts the electrical contact areas (item 11) of the transducer structures (Fig 1).

At the time of invention, it would have been obvious to a person of ordinary skill in the art to combine the hermetic seal and the abutting self-supporting structure and electrical contact areas of Tsuzuki et al. with the SAW device of Pahl et al. for the benefit of improving the quality of the seal by providing an airtight seal and to create a more contact device by eliminating the space between the self-supporting structure and the electrical contacts.

While neither Pahl et al. nor Tsuzuki et al. discloses explicitly that the seal coating (items 7-9) induces a strain in a substrate (item 1) on which the SAW device is fabricated, this is merely functional language that does not, by itself, provide additional structure. As the combination of Pahl et al. and Tsuzuki et al. discloses each of the claimed structural elements, the device resulting from that combination would be capable of the same functions. In addition, as the seal coating and the substrate to which it is attached are made of different materials, having different coefficients of thermal expansion, the seal coating would inherently place a strain in the substrate.

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4. With respect to claim 21, the combination of Pahl et al. and Tsuzuki et al. discloses the SAW device of claim 20. Pahl et al. discloses that the means for carrying the surface acoustic wave comprises a transducer structure (items 2a and 2b).

5. With respect to claim 22, the combination of Pahl et al. and Tsuzuki et al. discloses the SAW device of claim 21. Pahl et al. discloses that the transducer structure comprises aluminum (column 3, lines 55 and 56) patterned into interdigitated electrode fingers (items 2a and 2b).

6. With respect to claim 23, the combination of Pahl et al. and Tsuzuki et al. discloses the SAW device of claim 20. Pahl et al. discloses that the wafer-level means for sealing comprises a lithographically-formed structure sealing at least the means for carrying (Figures 6 and 7).

7. With respect to claim 24, the combination of Pahl et al. and Tsuzuki et al. discloses the SAW device of claim 23. Pahl et al. discloses that the wafer-level means for sealing leaves exposed at least a portion of the electrical contact areas (item 10).

8. Claims 17, 19, 25, 31, 32, and 34-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pahl et al. in view of Tsuzuki et al. and Gagnepain et al. (US 4391115).

9. With respect to claim 17, Pahl et al. discloses a surface acoustic wave (SAW) device sealed at the wafer level (Figures 1-7), the device comprising: an active area to be protected (item 5); electrical contact areas of the transducer structures (item 10); and a lithographically-formed (column 4, lines 11-16) structure sealing at least the active area and leaving at least a portion of the electrical contact areas exposed (Figures 6

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and 7), wherein the lithographically-formed structure comprises a seal coating which comprises a self-supporting structure (Fig 6). Here, the lithographically formed structure comprising the seal coating is self-supporting, as the cover (item 9), resist structure (item 7), and high-resistance layer (item 8) are all part of the seal coating. Therefore, together, these components form a self-supporting structure.

Pahl et al. does not disclose expressly that the sealing structure hermetically seals the active area and forms a sealed pocket above the active area filled with a target gas, or that the self-supporting structure adjoins the electrical contact areas of the transducer structures.

Tsuzuki et al. teaches a SAW device in which the active area is hermetically sealed (Abstract), and in which a self-supporting structure (Fig 1, items 10 and 20) adjoins the electrical contact areas (item 11) of the transducer structures (Fig 1).

Gagnepain et al. teaches a SAW device in which a sealed pocket is formed above the active area and filled with a target gas (column 5, lines 65-68).

At the time of invention, it would have been obvious to a person of ordinary skill in the art to combine the hermetic seal and the adjoining self-supporting structure and electrical contact areas of Tsuzuki et al. and the gas-filled sealed pocket of Gagnepain et al. with the SAW device of Pahl et al. for the benefits of improving the quality of the seal by providing an airtight seal and to create a more contact device by eliminating the space between the self-supporting structure and the electrical contacts and for the benefit of providing a non-reactive environment in the sealed pocket.

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10. With respect to claim 19, the combination of Pahl et al., Tsuzuki et al., and Gagnepain et al. discloses the device of claim 17. Pahl et al. discloses that the SAW device is fabricated on a substrate from a group consisting of lithium tantalite, lithium niobate, and quartz (column 3, lines 48-50).

11. With respect to claim 25, the combination of Pahl et al., Tsuzuki et al., and Gagnepain et al. discloses the device of claim 17. Pahl et al. discloses that the lithographically-formed structure comprises a material of a thickness so as to be impermeable to undesired contaminants (column 4, lines 42-47).

12. With respect to claim 31, the combination of Pahl et al., Tsuzuki et al., and Gagnepain et al. discloses the device of claim 17. Pahl et al. discloses that the SAW device is fabricated on a lithium tantalite substrate (column 3, lines 48-50).

13. With respect to claim 32, the combination of Pahl et al., Tsuzuki et al., and Gagnepain et al. discloses the device of claim 17. Pahl et al. discloses that the SAW device is fabricated on a lithium niobate substrate (column 4, lines 48-50).

14. With respect to claim 34, the combination of Pahl et al., Tsuzuki et al., and Gagnepain et al. discloses the device of claim 17. The language “wherein the seal coating induces a strain in a substrate on which the SAW device is fabricated to compensate for thermal expansion of the substrate” is functional language that does not, by itself, impart additional structure to the device. As the combination of Pahl et al., Tsuzuki et al., and Gagnepain et al. discloses each of the claimed structural elements, the device resulting from that combination would be capable of the same functions. In addition, as the seal coating and the substrate to which it is attached are made of

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different materials, having different coefficients of thermal expansion, the seal coating would inherently place a strain in the substrate and the seal coating would at least partially compensate for the thermal expansion of the substrate.

15. With respect to claim 35, the combination of Pahl et al. and Tsuzuki et al. discloses the device of claim 20. Pahl et al. discloses that the wafer-level means for hermetically sealing forms a sealed pocket above the means for carrying the surface acoustic wave (Fig 6).

Neither Pahl et al. nor Tsuzuki et al. discloses expressly that the sealed pocket is filled with a target gas.

Gagnepain teaches a SAW device in which a sealed pocket is formed above the active area and filled with a target gas (column 5, lines 65-68).

At the time of invention, it would have been obvious to a person of ordinary skill in the art to combine the gas-filled sealed pocket of Gagnepain et al. with the SAW device of Pahl et al. as modified by Tsuzuki et al. for the benefit of providing a non-reactive environment in the sealed pocket.

16. With respect to claim 36, the claim elements thereof correspond to those of claim 17 and 34; therefore, claim 36 is unpatentable over Pahl et al. in view of Tsuzuki et al. and Gagnepain et al. for the same reasons as above.

17. Claims 18, 26-28, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pahl et al. in view of Tsuzuki et al., Gagnepain et al., and Onishi et al. (US 6154940).



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18. With respect to claim 18 the combination of Pahl et al., Tsuzuki et al., and Gagnepain et al. discloses the device of claim 17.

None of Pahl et al., Tsuzuki et al., or Gagnepain et al. disclose expressly that the lithographically-formed structure comprises a glassy material.

Onishi et al. teaches a SAW device that uses a glassy material to seal the active area (column 7, lines 43-51).

At the time of invention, it would have been obvious to a person of ordinary skill in the art to combine the glassy-material of Onishi et al. with the SAW device of Pahl et al. as modified by Tsuzuki et al. and Gagnepain et al. in order make the device more compatible with common electronics manufacturing processes.

19. With respect to claim 26, the combination of Pahl et al., Tsuzuki et al., and Gagnepain et al. discloses the device of claim 17.

None of Pahl et al., Tsuzuki et al., or Gagnepain et al. disclose expressly that the lithographically-formed structure comprises silicon dioxide.

Onishi et al. teaches a SAW device that uses silicon dioxide to seal the active area (column 7, lines 43-51).

At the time of invention, it would have been obvious to a person of ordinary skill in the art to combine the silicon dioxide of Onishi et al. with the SAW device of Pahl et al. as modified by Tsuzuki et al. and Gagnepain et al. in order make the device more compatible with common electronics manufacturing processes.

20. With respect to claim 27, the combination of Pahl et al., Tsuzuki et al., and Gagnepain et al. discloses the device of claim 17.

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None of Pahl et al., Tsuzuki et al., or Gagnepain et al. disclose expressly that the lithographically-formed structure comprises silicon nitride.

Onishi et al. teaches a SAW device that uses silicon nitride to seal the active area (column 7, lines 43-51).

At the time of invention it would have been obvious to a person of ordinary skill in the art to combine the silicon nitride of Onishi et al. with the SAW device of Pahl et al. as modified by Tsuzuki et al. and Gagnepain et al. in order make the device more compatible with common electronics manufacturing processes.

21. With respect to claim 28, the combination of Pahl et al., Tsuzuki et al., and Gagnepain et al. discloses the device of claim 17.

None of Pahl et al., Tsuzuki et al., or Gagnepain et al. disclose expressly that the lithographically-formed structure comprises a metal.

Onishi et al. teaches a SAW device that uses a metal to seal the active area (column 7, lines 43-51).

At the time of invention it would have been obvious to a person of ordinary skill in the art to combine the metal of Onishi et al. with the SAW device of Pahl et al. as modified by Tsuzuki et al. and Gagnepain et al. in order make the device more compatible with common electronics manufacturing processes.

22. With respect to claim 33, the combination of Pahl et al., Tsuzuki et al., and Gagnepain et al. discloses the device of claim 17.

None of Pahl et al., Tsuzuki et al., or Gagnepain et al. disclose expressly that the SAW device is fabricated on a quartz substrate.

Onishi et al. teaches a SAW device fabricated on a quartz substrate (column 15, lines 41-43).

At the time of invention it would have been obvious to a person of ordinary skill in the art to combine the quartz substrate of Onishi et al. with the SAW device of Pahl et al. as modified by Tsuzuki et al. and Gagnepain et al. in order make the device more compatible with common electronics manufacturing processes.

23. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pahl et al. in view of Tsuzuki et al., Gagnepain et al., and Bashir et al. (US 6716620).

24. With respect to claim 29, the combination of Pahl et al., Tsuzuki et al., and Gagnepain et al. discloses the device of claim 18.

None of Pahl et al., Tsuzuki et al., or Gagnepain et al. disclose expressly that the glassy material comprises a spin-on-glass.

Bashir et al. teaches an electronic device in which the chip is sealed by spin-on-glass (column 7, lines 51-57).

At the time of invention, it would have been obvious to a person of ordinary skill in the art to combine the spin-on-glass of Bashir et al. with the SAW device of Pahl et al. as modified by Tsuzuki et al. and Gagnepain et al. in order to make the device more compatible with common manufacturing processes.

25. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pahl et al. in view of Tsuzuki et al., Gagnepain et al., and Orcutt et al. (US 6743656).

26. With respect to claim 30, the combination of Pahl et al., Tsuzuki et al., and Gagnepain et al. discloses the device of claim 18.

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None of Pahl et al., Tsuzuki et al., or Gagnepain et al. disclose expressly that the glassy material comprises a sputtered glass.

Orcutt et al teaches an electronic device in which the chip is sealed by sputtered glass (column 4, line 67 through column 5, line 2).

At the time of invention, it would have been obvious to a person of ordinary skill in the art to combine the spin-on-glass of Orcutt et al. with the SAW device of Pahl et al. as modified Tsuzuki et al. and Gagnepain et al. in order to make the device more compatible with common manufacturing processes.

### ***Response to Arguments***

27. Applicant's arguments with respect to claims 17-19 and 25-36 have been considered but are moot in view of the new ground(s) of rejection.

28. Applicant's arguments filed 9 January 2009 have been fully considered but they are not persuasive. Applicant argues that the applied references do not disclose a seal coating that induces a strain in a substrate on which the SAW device is fabricated. However, this is merely functional language that does not, by itself, provide additional structure to the claimed device. As the combination of Pahl et al. and Tsuzuki et al. discloses each of the claimed structural elements, the device resulting from that combination would be capable of the same functions. In addition, as the seal coating and substrate are made of different materials having different coefficients of thermal expansion, the seal coating would inherently be capable of inducing strains in the substrate.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Derek J. Rosenau whose telephone number is (571) 272-8932. The examiner can normally be reached on Monday thru Thursday 7:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leung Quyen can be reached on (571) 272-8188. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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